

REMARKS

The specification has been amended to correct typographical and grammatical errors and remove an ambiguity. No new matter has been added.

The drawings are objected to under 37 CFR 1.83(a) for failing to show the "first duct having a substantially smaller cross section than the second duct," as claimed in claim 12, and claim 12 is rejected objected to with the examiner requested clarification as to "how/why the first duct is smaller than the second duct". The applicant respectfully traverses these objections.

In Fig. 2a it is evident that duct 114a has a smaller cross section than ducts 114b or 114c. This is further clarified with reference to Fig. 1a, 1c and 1d which clearly show in section that corresponding duct 14a has a smaller cross-section than the larger ducts 14b and 14c. Furthermore, the Specification at page 17, lines 4-7, states that the "dimensions of the first duct 114a are preferably .5 inches by one inch by fifteen inches, and the dimensions of the second and third ducts 114b, 114c are preferably two inches by two inches by twenty inches." Thus, in view of Fig. 1d and the clear description of the cross-sections in relation to the embodiments shown in Figs. 2a-2d, it is believed that no further clarification to the drawings or to the description of the claimed subject matter is required.

Claims 15, 17 and 42 stand objected to because the examiner believes that the first securing ring should be coupled to the first duct. The applicant traverses the objection, because in claims 15, 17 and 42, the *second duct* corresponds to ducts 114b and 114c, while the first duct corresponds to duct 114a. Ducts 114 and 114c are the ducts detachably coupled to the jacket by securing rings 158. See Fig. 2a and Spec. at page 19, lines 9-14. As such, it is respectfully submitted that the claim language is correct as written.

Claims 1, 2, 4 and 5 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Pat. No. 4,070,553 to Hass. The applicant respectfully traverses the rejection for the following reasons.

Claim 1 requires a first duct defining a first duct chamber. A *duct* is "an often enclosed passage or channel for conveying a substance, especially a liquid or gas." (The American Heritage Dictionary of the English Language, Fourth Edition) In the present case, the gas is air moved by the sound transducer mounted in the duct.

The Hass system does not have any *duct* which defines a *chamber*. Element 11 which the examiner identifies as corresponding to the first duct, is a supporting body of molded flexible plastics, foam padding, fiber padding 29, 31 covered with denim, nylon, vinyl, or other material; i.e., padding covered with a material. Further, from Fig. 3 in Hass it is clear that such supporting body is completely filled with padding 29, 31 and does not form a passage or channel (i.e., a duct), and does not provide the claimed

chamber. Furthermore, there is no teaching or suggestion to modify Hass to form a duct defining a chamber.

Claims 26, 27, 30-33, 38, 41, 43-45 and 54 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,815,579 to Boyden. The applicant respectfully traverses the examiner's rejection for the following reasons.

First, claim 26 as amended requires that when the garment is worn by a wearer, "at least one of said second and said fourth sound transducers face inward toward a torso of a body of the wearer." This is clearly shown by applicant's Figs. 2a (indicating the transducers directed toward the chest) and 2b (indicating the transducer directed toward the back). The specification makes clear the advantage of arranging transducers in this manner:

Sound transducers 116 mounted in the open ends 140, 142 of the second and third ducts 114b, 114c project soundwaves inward toward a body of the wearer which imparts a vibrational component to the body of the wearer. (Spec. at page 17, lines 20-23)

Boyden fails to teach or suggest this configuration of transducers. In Boyden none of the transducers face inward toward the body of the wearer. Moreover, Boyden fails to teach or suggest, alone or in combination with other cited art, facing transducers inward toward a *torso* of the wearer.

Second, claim 27 requires that the "first duct is adapted to flex without pinching off said first duct chamber." Similarly, claim 33 requires that the "second duct is adapted to flex without pinching off said second duct chamber." The examiner states that this is

shown or taught by Fig. 2 and col. 5, lines 24-34 and col. 13, lines 61-63. However, a careful reading of these passages in conjunction with Fig. 2 fails to provide the necessary teaching. Fig. 2 shows an enclosure 24 which is conformed to the wearer's body; there is no indication that the enclosure is being flexed. Further, the locations in the text indicate that the chambers are flexible, possibly a heavy gauge woven fabric or carbon fiber composite, are pliable or conformable. But nowhere is there a teaching or suggestion that such flexibility, pliability or conformability is provided in a manner that will not cause "pinching off" of the duct.

Third, claim 54 requires a *modular* speaker personal wearable speaker system attachable to a garment, the system including ducts and sound transducers, wherein "said ducts are adapted to be interchangeably coupled to the garment, and said transducers are adapted to be interchangeably coupled to said ducts." In Boyden the transducers are fixed within a respective enclosure, regardless of the embodiment described by Boyden. Clearly, the transducers are not *interchangeably* coupled to the ducts, and no suggestion therefor is provided in Boyden.

For the foregoing reasons, claims 26-27, 30, 31, 33, 38, 41, 43-45 and 54 are not anticipated by Boyden.

Claims 1, 3, 6-9, 12-14, 16 and 18-19 stand rejected under 35 U.S.C. § 103(a) as obvious in view of U.S. Pat. No. 4,589,134 to Waldron. The applicant respectfully traverses the examiner's rejection for the following reasons.

Claim 1 requires a garment including a *first duct* having a lengthwise first dimension, a widthwise second dimension which is perpendicular to said first dimension, and a heightwise third dimension which is perpendicular to both said first dimension and said second dimension, said first duct having a second dimension to third dimension ratio of not more than three to one, said first duct *defining a first duct chamber*. As discussed above, a "duct" is a "passage or channel for conveying a substance", such as, in the present case, air moved by a transducer.

Waldron fails to teach a garment with any ducts defining chambers. In Waldron, the garment is provided with pockets 15 and 16 which hold the transducers. Such pockets are not the claimed ducts, nor do they suggest ducts.

Further, while the examiner states that the claimed dimension ratio is not taught by Waldron, she takes "official notice that it is known to vary the height dimension by adding different amounts of pile filler to achieve lightweight or bulky insulating garments."

There is no suggestion to place bulky insulating filler in a duct which acts as an acoustic chamber for a transducer. In addition, it must be noted that Waldron does not teach the use of *any pile filler*. Pile 17 is not filler for the pockets 15 and 16, but rather functions solely as loops for a Velcro type hook and loop fastener for pocket flaps of pockets 15 and 16.

Moreover, the claimed cross-sectional ratio of dimensions is for a duct which defines a *chamber*, i.e., an enclosed space. The pockets of Waldron are not ducts defining chambers. Consider, e.g., a common pants pocket. It does not define a duct or form a chamber. Imagine placing a transducer into that pocket. Even if some space was created about the transducer within the pocket by virtue of the shape of the transducer, the pocket nevertheless would still not be a duct defining a chamber. The pockets of Waldron are no different.

Furthermore, the claimed dimensional ratio provides an advantage not provided by the prior art. As stated in the Background of the Invention,

Because of the nature of thin narrow enclosures of the above referenced patents, the speaker chamber volumes formed by the enclosures are necessarily small and thereby provide reduced sound quality from the speakers especially in the lower frequency range. For example, U.S. Patent Nos. 5,815,579 [Boyden] and 5,953,434 describe an enclosure structure having a nearly four to one dimensional ratio of width to thickness. Because of the relatively large dimensional ratio of width to thickness of the prior art references, unless the enclosures are formed from substantially rigid materials, the chambers can easily be pinched off (and thereby further reduced in effective size) as the thin narrow enclosures will flex and bend as the wearer moves and flexes and bends the article of clothing. On the other hand, if the enclosures are in fact rigid, they are uncomfortable to wear and will considerably restrict movement of the wearer. (Spec. at page 2, line 22 et seq.)

The solution to the problem is provided at page 12, lines 9-15,

Each of the ducts 14a, 14b, 14c has a width to height ratio of not more than approximately three to one or a height of at least .25 inches. The width to height ratio of the flexible ducts helps prevent the chambers 38a, 38b, 38c from being pinched off as the ducts 14a, 14b, 14c bend and flex, thereby preventing an otherwise adverse effect on the sound quality output from the speaker system 10.

Claims 3 and 9 require first and second ducts, respectively, having round cross-sections. The examiner states that it would be obvious "to have a round cross-section by including filler in the invention of Waldron for insulation purposes." The ducts in the applicant's invention are empty, not provided with filler. The pocket in Waldron which holds the speaker is also otherwise empty and not provided with filler. While it may be known to use thermal insulation in garments, there is clearly no incentive or suggestion to provide such thermal insulation in a duct which defines an acoustic chamber for a transducer.

Claim 8 requires that the second duct is adapted to flex without pinching off the second chamber. The examiner states that this is taught by Waldron, but a careful reading of Waldron fails to supply the stated teaching. Moreover, as stated above, Waldron does not even teach the use of a duct.

Claim 12 requires that the first duct is smaller in cross-sectional area than the second duct. Again, the examiner relies on Waldron teaching the use of filler to alter the dimensions of the pocket. However, this is not the teaching of Waldron, and Waldron teaches pile only for use as a Velcro-type closure. There is no pile *in* the pocket.

Claim 13 requires ducts attached to the collar of a garment. Waldron fails to teach mounting the transducers in ducts.

Claim 14 requires a cover at least partially over the second duct. The examiner states that this is shown by the top portion of 16. In addition to what has been previously stated to distinguish to the claimed ducts from Waldron's pockets, the top portion or outer layer of 16 is still the pocket, not a cover over the pocket.

For the foregoing reasons, claims 1, 3, 6-9, 12-14, 16 and 18-19 are not obvious in view of Waldron.

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Waldron in view of Boyden and further in view of Hass. Claims 10 and 11, as originally presented, are not suggested by the references for the reasons provided above with respect to the references individually. Nevertheless, in order to expedite allowance of the claims, claims 10 and 11 have been similarly amended to require that the "sound transducers face inward toward *a torso of a body of the wearer*." Hass teaches only directing speakers toward the ears of a listener. However, by directing the sound transducers inward toward a torso of a body of the wearer, "sound emanating from the front portions of the transducers projects inward toward the body of the wearer and imparts a vibrational component upon the wearer which enhances perception of the low frequency output." (Spec. at page 6, line 24 – page 7, line 2; page 14, lines 13-24; page 17, lines 20-23) This is not suggested by the combination of references.

Therefore, the combination of references fails to render claims 10 and 11 obvious.

Claims 15 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Waldron in view of U.S. Pat. No. 4,343,158 to Campbell. The applicant respectfully traverses the examiner's rejection for the following reasons.

First, claims 15 and 17 are not suggested by the references for the reasons provided above with respect to Waldron individually.

Second, Waldron fails to teach any duct coupled to the garment. In distinction, Waldron places the sound transducer in a pocket with a flap secured by Velcro. The top portion of pocket 16 (pocket flap) is not a cover over a duct.

Third, contrary to the examiner's assertion, Campbell is not from a similar field of endeavor. Waldron pertains to a garment incorporating a personal sound system and is classified in class 381 (electrical audio signal processing systems and devices), while Campbell pertains to a pouch for holding insulin and is classified in class 62 (refrigeration). These fields are not related, and it would not be obvious for one skilled in one art to look to the other for teachings.

Fourth, regardless of the relationship of the fields of endeavor, Waldron in view of Campbell still fails to teach "securing rings each being detachably coupled to said garment and *at least partially securing said second duct to said garment*". In both references, no duct is secured to a garment. In Waldron the transducer is held in a pocket formed in the garment. The Velcro for the pocket flap does not secure the duct to the

garment. Further, it is not clear how the "ring" of Velcro from Campbell could be incorporated into Waldron such that it would be detachably coupled to the garment.

Therefore, the combination of references fails to render claims 15 and 17 obvious.

Claim 20 stand rejected under 35 U.S.C. § 103(a) as obvious of Waldron in view of Boyden. Claim 20 is not suggested by the references for the reasons provided above with respect to Waldron and Boyden individually. Moreover, the main concept of Waldron is to place sound transducers in chest pockets of a garment. There is no teaching or suggestion to modify this design to enlarge the pockets beyond the size required by the transducers. Therefore, the combination of references fails to render claim 20 obvious.

Claims 28, 37 and 42 stand rejected under 35 U.S.C. § 103(a) as obvious over Boyden. Claims 28 and 37 are allowable for the reasons provided above with respect to claims 3, 9 and 12. Claim 42 is allowable for the reasons provided above with respect to claims 15 and 17.

Claims 29 and 34-36 stand rejected under 35 U.S.C. § 103(a) as obvious over Boyden in view of Hass. Claims 29, 34 and 36 are allowable for the reasons provided above with respect to claim 26. Claim 34 is further allowable for the reasons provided above with respect to claims 3 and 9.

Claim 52 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Boyden in view of U.S. Pat. No. 4,603,327 to Leonard. The applicant respectfully traverses the rejection for the following reasons.

Contrary to the examiner's statement, Boyden specifically teaches how an electrical connection is provided between the sound transducer and the source player:

The connections between the transducers and their power and driving sources may be accomplished by the use of wires or other conventional electrical connection devices. It is also possible to use wireless technology, such as radio frequency, infrared or inductive coupling in order to distribute the signals from audio sources to the transducer drive electronics. Col. 8, lines 20-27.

As such, there is no incentive or motivation to seek out unconventional means to provide such coupling. Further, even if there were such an incentive, Leonard is very limited in its teaching: a zipper with electrical contacts can be moved to actuate a signal transmitter to send an alarm signal. There is no suggestion in Leonard to use a zipper to couple a sound transducer to a source player. Therefore, the combination of references fails to teach or suggest the claimed invention, and claim 52 is allowable over the cited art.

In light of all of the above, it is submitted that the claims are in order for allowance, and prompt allowance is earnestly requested. Should any issues remain outstanding, the Examiner is invited to call the undersigned attorney of record so that the case may proceed expeditiously to allowance.

Respectfully submitted,



David S. Jacobson
Reg. No. 39,235
Attorney for Applicant(s)

GORDON & JACOBSON, P.C.
65 Woods End Road
Stamford, CT 06905
(203) 329-1160

August 6, 2003